

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application. Please note that no amendments are being made to the claims in this Response.

Listing of Claims:

1. (Previously presented) A G-protein fusion receptor comprising
 - a) an extracellular domain comprising an extracellular domain amino acid sequence at least 75% identical to either an extracellular CaR amino acid sequence, an extracellular mGluR amino acid sequence, or an extracellular GABA_B receptor amino acid sequence;
 - b) a transmembrane domain joined to the carboxy terminus of said extracellular domain, said transmembrane domain comprising a transmembrane domain amino acid sequence at least 75% identical to either a transmembrane CaR amino acid sequence, a transmembrane mGluR amino acid sequence, or a transmembrane GABA_B receptor amino acid sequence;
 - c) an intracellular domain joined to the carboxy terminus of said transmembrane domain comprising all or a portion of an intracellular amino acid sequence at least 75% identical to either an intracellular CaR amino acid sequence, an intracellular mGluR amino acid sequence, or an intracellular GABA_B receptor amino acid sequence, provided that said portion is at least 10 amino acids;
 - d) an optionally present linker joined to the carboxy terminus of said intracellular domain; and
 - e) a G-protein joined either to said intracellular domain or to said optionally present linker, provided that said G-protein is joined to said optionally present linker when said optionally present linker is present,wherein said domains are functionally coupled such that a signal from the binding of a ligand is transduced to the intracellular domain when said receptor is present in a suitable host cell, and wherein said intracellular domain when present in a wild type receptor does not interact with said G-protein.

2. (Previously presented) The G-protein fusion receptor of claim 1, wherein said extracellular domain consists of said extracellular domain amino acid sequence, said transmembrane domain consists of said transmembrane domain amino acid sequence; and said intracellular domain consists of said intracellular domain amino acid sequence.

3. (Original) The G-protein fusion receptor of claim 2, wherein said optionally present linker is present and is a polypeptide 3 to 30 amino acids in length.

4. (Original) The G-protein fusion receptor of claim 2, wherein said optionally present linker is not present.

5. (Previously presented) The G-protein fusion receptor of claim 3, wherein said G-protein is selected from the group consisting of: $G_{\alpha 15}$, $G_{\alpha 16}$, G_{qo5} , and G_{qi5} .

6. (Previously presented) The G-protein fusion receptor of claim 5, wherein any of said CaR sequence present is a human CaR sequence, any of said mGluR sequence present is from a human mGluR, and any of said GABA_B receptor sequence present is from human GABA_B receptor.

7. (Previously presented) A nucleic acid comprising a nucleotide sequence encoding for the G- protein fusion receptor of any one of claims 1-6, 42, or 43.

8. (Previously presented) An expression vector comprising a nucleotide sequence encoding for the G-protein fusion receptor of any one of claims 1-6, 42, or 43 transcriptionally coupled to a promoter.

9. (Previously presented) A recombinant cell comprising the expression vector of claim 8 and a cell wherein the G-protein fusion receptor is expressed and is functional.

10. (Previously presented) A recombinant cell produced by combining a vector of claim 8, wherein said vector comprises the nucleic acid of claim 7 and elements for introducing heterologous nucleic acid into a cell wherein the G-protein fusion receptor is expressed, and said cell.

11. (Previously presented) A process for the production of a G-protein fusion receptor comprising:

growing procaryotic or eukaryotic host cells comprising a nucleic acid sequence expressing the G-protein fusion receptor of any one of claims 1-6, 42, or 43, under suitable nutrient conditions allowing for cell growth.

12-41. Canceled.

42. (Previously presented) The G-protein fusion receptor of claim 4, wherein said G-protein is selected from the group consisting of: $G_{\alpha 15}$, $G_{\alpha 16}$, G_{qo5} , and G_{qi5} .

43. (Previously presented) The G-protein fusion receptor of claim 42, wherein any of said CaR sequence present is a human CaR sequence, any of said mGluR sequence present is from a human mGluR, and any of said $GABA_B$ receptor sequence present is from human $GABA_B$ receptor.

44. (Previously presented) The G-protein fusion receptor of claim 1, wherein said intracellular domain has at least 90% sequence identity with a portion of a CaR intracellular domain sequence at least 50 amino acids in length.

45. (Previously presented) The G-protein fusion receptor of claim 1, wherein said intracellular domain has at least 90% sequence identity with a portion of a mGluR intracellular domain sequence at least 50 amino acids in length.

46. (Previously presented) The G-protein fusion receptor of claim 1, wherein said intracellular domain has at least 90% sequence identity with a portion of a GABA_B receptor intracellular domain sequence at least 50 amino acids in length.

47. (Previously presented) The G-protein fusion receptor of claim 1, wherein said extracellular domain and said transmembrane domain have at least 75% sequence identity with an mGluR extracellular domain and transmembrane domain or a GABA_B receptor extracellular domain and transmembrane domain, said intracellular domain has at least 75% sequence identity with a CaR intracellular amino acid sequence, and said G-protein couples to phospholipase C.

48. (Previously presented) The G-protein fusion receptor of claim 47, wherein said extracellular domain and said transmembrane domain are from a Type 2 mGluR.

49. (Previously presented) The G-protein fusion receptor of claim 47, wherein said extracellular domain and said transmembrane domain are from a Type 3 mGluR.

50. (Previously presented) The G-protein fusion receptor of claim 47, wherein said extracellular domain and said transmembrane domain are from a Type 4 mGluR.

51. (Previously presented) The G-protein fusion receptor of claim 47, wherein said extracellular domain and said transmembrane domain are from a Type 6 mGluR.

52. (Previously presented) The G-protein fusion receptor of claim 47, wherein said extracellular domain and said transmembrane domain are from a Type 7 mGluR.

53. (Previously presented) The G-protein fusion receptor of claim 47, wherein said extracellular domain and said transmembrane domain are from a Type 8 mGluR.

54. (Previously presented) The G-protein fusion receptor of claim 47, wherein said extracellular domain and said transmembrane domain are from a GABA_B receptor.

55. (Previously presented) The G-protein fusion receptor of claim 1, wherein said G-protein is a chimeric G-protein.

56. (Previously presented) The G-protein fusion receptor of claim 47, wherein said G-protein is a chimeric G-protein.

57. (Previously presented) A G-protein fusion receptor comprising
- a) an extracellular domain comprising an extracellular domain amino acid sequence at least 90% identical to an extracellular mGluR amino acid sequence;
 - b) a transmembrane domain joined to the carboxy terminus of said extracellular domain, said transmembrane domain comprising a transmembrane domain amino acid sequence at least 90% identical to a transmembrane mGluR amino acid sequence, or a transmembrane CaR amino acid sequence;
 - c) an intracellular domain joined to the carboxy terminus of said transmembrane domain comprising all or a portion of an intracellular amino acid sequence at least 90% identical to an intracellular CaR amino acid sequence, provided that said portion is at least 10 amino acids;
 - d) an optionally present linker joined to the carboxy terminus of said intracellular domain;
- and
- e) a G-protein joined either to said intracellular domain or to said optionally present linker, provided that said G-protein is joined to said optionally present linker when said optionally present linker is present.

58. (Previously presented) The fusion receptor of claim 57, wherein said transmembrane domain comprises a transmembrane domain amino acid sequence at least 90% identical to a transmembrane mGluR amino acid sequence.

59. (Previously presented) The fusion receptor of claim 57, wherein said transmembrane domain comprises a transmembrane domain amino acid sequence at least 90% identical to a transmembrane CaR amino acid sequence.

60. (Previously presented) A G-protein fusion receptor comprising

a) an extracellular domain comprising an extracellular domain amino acid sequence at least 90% identical to an extracellular GABA_B receptor amino acid sequence;

b) a transmembrane domain joined to the carboxy terminus of said extracellular domain, said transmembrane domain comprising a transmembrane domain amino acid sequence at least 90% identical to either a transmembrane CaR amino acid sequence, or a transmembrane GABA_B receptor amino acid sequence;

c) an intracellular domain joined to the carboxy terminus of said transmembrane domain comprising all or a portion of an intracellular amino acid sequence at least 90% identical to an intracellular CaR amino acid sequence, provided that said portion is at least 10 amino acids;

d) an optionally present linker joined to the carboxy terminus of said intracellular domain; and

e) a G-protein joined either to said intracellular domain or to said optionally present linker, provided that said G-protein is joined to said optionally present linker when said optionally present linker is present.

61. (Previously presented) The fusion receptor of claim 60, wherein said transmembrane domain comprises a transmembrane domain amino acid sequence at least 90% identical to a transmembrane GABA_B receptor amino acid sequence.